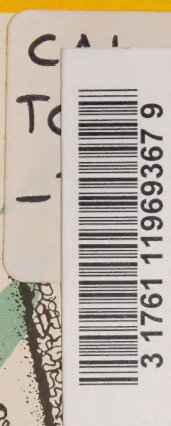



HAY FEVER

CANADIAN HAVENS FROM

CANADIAN GOVERNMENT TRAVEL BUREAU

OTTAWA, CANADA





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canadian havens from hay fever

1965

BY
I. J. BASSETT AND C. FRANKTON.
PLANT RESEARCH INSTITUTE,
RESEARCH BRANCH
CANADA AGRICULTURE,
CENTRAL EXPERIMENTAL FARM,
OTTAWA, ONTARIO.

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canadian
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from may fever

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OTTAWA, 1965

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foreword

This booklet presents authentic and up-to-date information on the incidence in Canada of ragweed pollen, principal cause of hay fever, so that sufferers may plan their Canadian vacations accordingly. It is prepared for the more than ten million ragweed pollen victims in the United States and the eight hundred thousand more in Eastern Canada.

Many holiday areas in Canada are entirely free from the irritant, and others have so low a ragweed pollen air-index that they offer similar vacation relief. The booklet, a digest of all available information on ragweed pollen in Canada, seeks to answer in some detail the questions most often asked on the subject. May it prove of real value to those who most appreciate the importance of this public health problem—the victims of hay fever.

biology of pollen

ALL FLOWERING PLANTS
PRODUCE POLLEN BUT
NOT ALL POLLEN IS IM-
PORTANT IN HAY FEVER.

Transportation of pollen from the anthers (the male sexual organs in plants) to the ovary (the female organ) is brought about by a variety of agencies of which wind and insects are the most important. Pollen from insect-pollinated plants is usually larger, stickier, and less buoyant than pollen of wind-pollinated plants and it rarely causes hay fever. Most of the plants with showy flowers are insect-pollinated. Some of these plants bloom during the fall hay fever season and are frequently falsely accused as causative agents. Pollens of some insect-pollinated plants, such as the goldenrods, can certainly produce hay fever symptoms but normally the heavy sticky pollen is carried by insects or it drops to the ground close to the plants.

THE POLLEN OF WIND-
POLLINATED PLANTS IS
THE CAUSE OF MOST OF
THE HAY FEVER.

Not all wind-pollinated plants, however, have toxic pollen. The pollen of spruce, for example, although produced in enormous quantities, has not been shown to be responsible for causing hay fever. In order to be of importance in hay fever, plants must be widely distributed and abundant. They must also produce large quantities of pollen which is air-borne and toxic. This combination of characters is present in only a comparatively few plants including certain weeds: ragweeds, Russian thistle, summer cypress, wormwoods, pigweeds, plantains; some grasses, such as timothy, Kentucky blue grass and orchard grass; and a few trees: alder, poplars, oaks, ashes, birches, beech, elms, and maples. Pollen from any of these plants and a number of others may produce the usual distressing symptoms, but ragweed, because of its specific toxic qualities and abundance, is the bane of the greatest number of sufferers.



kinds of ragweed

RAGWEEDS ARE COARSE, WEEDY-LOOKING HERBS, WITH GREENISH INCONSPICUOUS WIND-POLLINATED FLOWERS GROUPED IN HEADS.

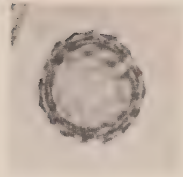
The pollen-producing flowers are in spikes terminating the stem and branches. The female flowers are borne in groups of 1 to 3, below the male spikes, at the base of the upper leaves and close to the stems. Ragweeds are native to North America. With the clearing of land and intensification of agriculture, they have spread to become serious pests, particularly in the East.

Three species of ragweed occur in Canada:

The common or short ragweed, *Ambrosia artemisiifolia* L., is a grayish green annual from 6 inches to 5 feet in height, with bushy branches and finely divided leaves (Figure 1). This species is by far the most abundant of the ragweeds and the most important factor in hay fever in Eastern North America. It is found under a wide variety of soil and moisture conditions in cultivated fields, vacant lots, waste places, roadsides and fence rows. This plant is known in every province of Canada.

Giant or great ragweed, also called kinghead, *Ambrosia trifida* L., is a robust annual, from 1½ to 9 feet in height, with fewer and larger leaves than the common ragweed. The leaves are rough and usually have three coarse lobes (Figure 2). This plant is found along roadsides, in agricultural fields, and in waste places near towns. It is sometimes found in more undisturbed habitats, marshes that dry out in summer or on rich moist soils near streams, and reaches its greatest stature under these conditions. Although much less abundant than common ragweed in the East and of far less importance as a hay fever plant, it is the most frequently occurring ragweed in southern Manitoba.

The perennial or western ragweed, *Ambrosia coronopifolia* (T. & G.) Farw., has a perennial creeping root system (Figure 3). Apart from having this character, it resembles the common ragweed in general appearance, although it is usually a smaller plant with hairier and less finely lobed leaves. Western habitats include native prairie, pastures and roadsides, generally on the drier sandier soils. In the East this plant is also found on sandy soils in pasture and on roadsides but more often along railroads or adjacent railway installations. In more recent years, perennial ragweed, the least common of the three species, has been noticed frequently in Ontario and Quebec.



RAGWEED POLLEN

FIGURE 1

Common ragweed — *Ambrosia artemisiifolia* A. Plant; B. head of male flowers; C. "seed".



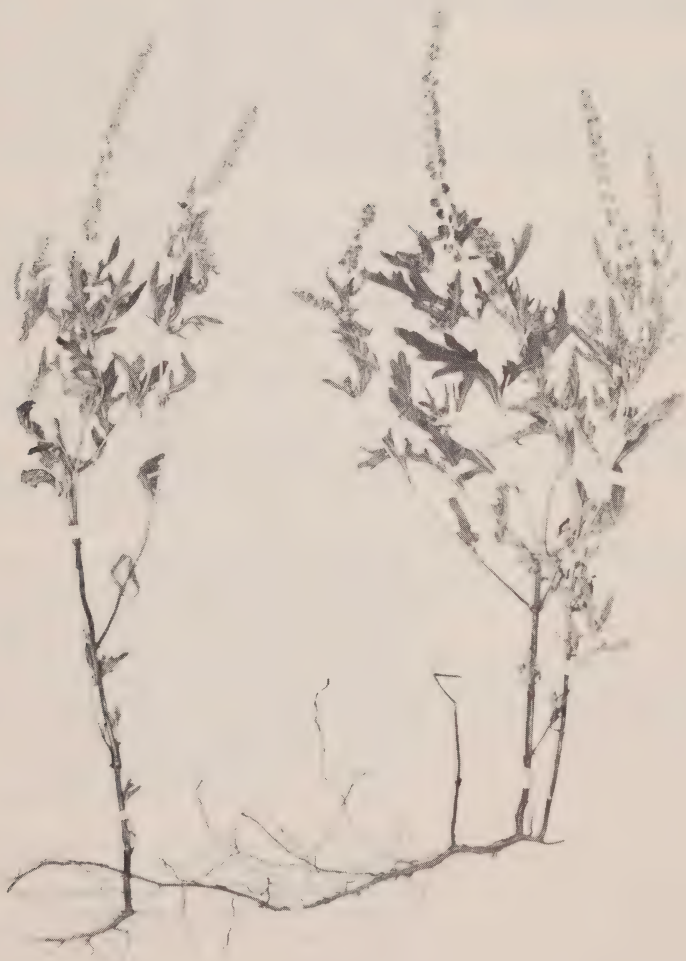
FIGURE 2

Giant ragweed — *Ambrosia trifida*. A. Plant; B. head of male flowers from above showing 3 distinct dark lines; C. head of male flowers in side view; D. "seed".



FIGURE 3

Perennial or Western Ragweed — *Ambrosia coronopifolia*. This plant is the least common to the three species. It resembles the common ragweed in general appearance.



distribution of hay fever in canada

The abundance of ragweed and ragweed pollen in the various Canadian provinces is dealt with below. Other hay fever plants are mentioned where data are available, and some indication is given of the length of the different hay fever periods throughout the growing season.

ATLANTIC PROVINCES

The Atlantic Provinces of Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland are fortunate in having comparatively little ragweed. Ragweeds do occur and are widely spread, but only in the Annapolis Valley and a few other areas are there fairly extensive stands. But even in these areas the situation in regard to this pest is very different to that in southern Ontario and Quebec, where ragweed is a serious agricultural weed.

Reference to the Ragweed Air-Pollen Indexes will show that very little of the sampling so far carried out in the Atlantic Provinces has resulted in a high index. Almost complete absence of ragweed and the low indexes for St. John's and Corner Brook are convincing evidence that Newfoundland is a safe haven for ragweed pollen sufferers.

It is encouraging to note that Nova Scotia, Prince Edward Island and New Brunswick are carrying out control and survey campaigns with a great deal of success. The ragweed situation in the larger part of these areas is quite satisfactory at present and the efforts planned and under way will ensure the continuance of this state of affairs and may even lead to complete eradication.

QUEBEC

For those susceptible to ragweed pollen the most satisfactory and accessible area in Quebec is the Gaspé Peninsula. Since 1936, the Quebec Department of Agriculture has been carrying out a ragweed eradication campaign in the Gaspé Peninsula, and the limited amounts of ragweed originally present have been further reduced. The Lake St. John district and the large northern counties of Temiscamingue and Abitibi, including the mining towns of Noranda, Rouyn and Val d'Or, are safe refuges from ragweed. This situation also prevails in several localities in the Laurentian area north of Montreal.

The rich lowlands along the Ottawa and St. Lawrence rivers, bounded to the north by the Laurentians, to the south by the Appalachians of the Eastern Townships and extending east to Quebec, is polluted with ragweed and not recommended for ragweed pollen sufferers.

Hay fever seasons in southern Quebec are very similar to those mentioned under Ontario.

ONTARIO

Northern Ontario, including the towns of Temagami, Kirkland Lake, Timmins, Cochrane, Kapuskasing, Sudbury and Sault Ste. Marie, is considered a safe retreat. Dorset, Rosseau and some of the other wooded areas in the Muskoka Lakes District should be nearly as satisfactory. The area about Lake Nipissing is not free from ragweed but the index figures for 1951-53 at North Bay suggest that this locality should be safe. The greater part of southern Ontario including many of Ontario's major cities is heavily polluted with ragweed.

In general, hay fever in Ontario is caused by tree pollens in April and May, grass pollens in June and July, and ragweed pollens in the late summer. Ragweed pollen is at the highest incidence from the middle of August to the middle of September.

MANITOBA

Riding Mountain National Park and the north of the province are havens for those in search of an escape from ragweed pollen. The ragweed pollen air-index figures for Morris and Emerson reflect the fact that infestations of giant ragweed occur in the rich agricultural districts in the Red River Valley. Common ragweed occurs at Winnipeg and other sites in southern Manitoba.

Other plants which contribute to hay fever in Manitoba are trees from the first of May to early June, grasses from June to the end of July, and Russian thistle and sages in August.

SASKATCHEWAN

Ragweed pollen sufferers should be symptom-free anywhere in the province. The only possible exception is the extreme south where burweed marsh elder and poverty weed are found in abundance.

The most important sources of hay fever pollen in Saskatchewan are the grasses, Russian thistle, sages and a few trees such as the poplars, elm, box-elder and birches. Russian thistle is a common weed in agricultural lands and waste places.

ALBERTA

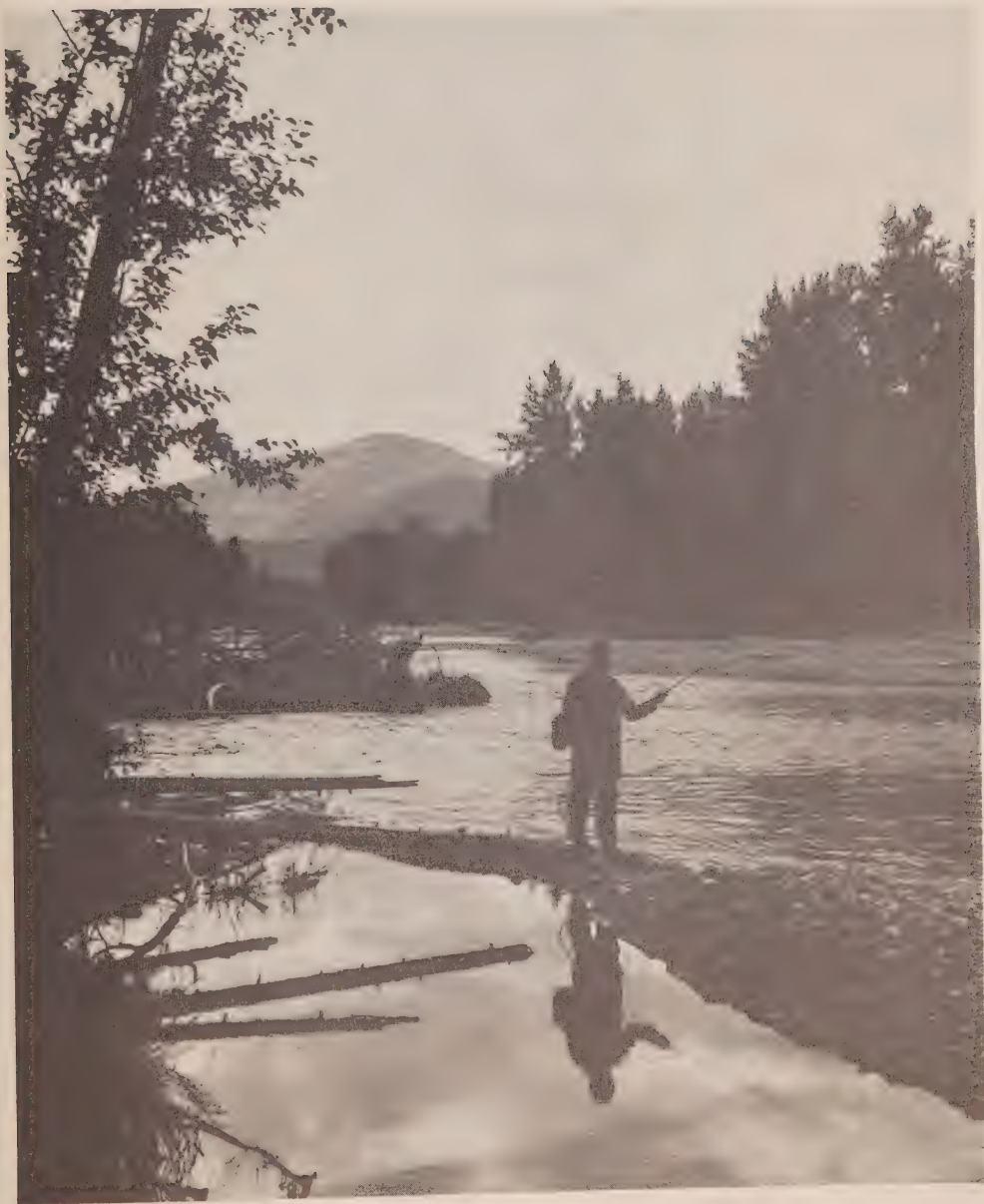
Practically all sections of the province are considered safe for people sensitive to ragweed pollen. The possible exception is in the southeast, where burweed marsh elder and other ragweed relatives are fairly common.

Tree pollens occur abundantly in the forested areas in April and May; the grasses produce pollen from June to September, but mostly in July; and Russian thistle and sages pollinate in July and August.

BRITISH COLUMBIA

For ragweed pollen sufferers, the province as a whole is undoubtedly one of the safest areas in Canada. Although all three ragweeds, burweed marsh elder and false ragweed occur, they are rare plants and their pollen adds little to the air-borne total.

Pollen from trees, grasses and a few weeds plays a much more important role in British Columbia than ragweed pollen. In the southwestern part of the province the tree hay fever season probably extends from late February to May. This is followed by a grass season from late April to mid-October with the peak count in June, a plantain season from May to September with the peak count also in June, and a season of sagebrushes and Russian thistle from August to mid-October. In inland British Columbia, sagebrushes and Russian thistle are undoubtedly more important than on the coast.



ragweed pollen index for canada

Throughout North America, standard methods and apparatus are utilized for the collection of pollen grains. Slides are exposed daily, in some cases for several months, but usually from August 1 to the end of September, the ragweed hay fever season. Calculations based on the pollen catches permit the derivation of a ragweed pollen air-index. The index indicates the degree of exposure in any particular community. As the methods and calculations are uniform, this index permits comparisons of various localities.

All ragweed pollen air-indexes for Canada are listed in the following table.

Individuals sensitive to ragweed pollen are usually sensitive to pollens of poverty weed (*Iva axillaris*), burweed marsh elder (*Iva xanthifolia*), false ragweed (*Franseria spp.*), and cockleburs (*Xanthium spp.*). Pollens of these plants appearing on test slides are added to those of the ragweeds in computing the air-indexes. Marsh elder is the most abundant of this group in Canada. These ragweed relatives may be more important than the ragweeds in some areas of Western Canada, but in the East they influence the index figures to a very minor degree.

The techniques employed in this work and the margins of safety noted at the beginning of the list of indexes are those recommended by the Pollen Survey Committee of the American Academy of Allergy. Much of the earlier information for the Canadian stations was obtained by this Committee under the Chairmanship of Mr. O. C. Durham. Most of the New Brunswick data in this list were made available by Dr. C. W. Argue who, at the University of New Brunswick, is in charge of the ragweed pollen studies financially supported by the New Brunswick Bureau of Information. Drs. M. G. Dudley and C. H. A. Walton of Winnipeg were responsible for much of the earlier data from Manitoba. Recent index figures for the majority of stations in Quebec and Ontario were supplied by the provincial Departments of Agriculture. Practically all other stations were the responsibility of the Canada Department of Agriculture, in large part with the co-operation of Dr. E. Campagna, La Faculté d'Agronomie, Université Laval, Québec; and with authorities at the University of Alberta.

| map reference number | province and locality | period of ragweed pollen survey | average ragweed pollen air-index |
|----------------------------|-----------------------------|--|---|
|----------------------------|-----------------------------|--|---|

ANY CITY OR COMMUNITY HAVING AN INDEX

above 10 is not recommended
between 5 and 10 is fairly good
below 5 is good
below 1 is excellent

| | | | |
|----|----------------------------------|-------------|-----|
| | NEWFOUNDLAND | | |
| 1. | St. John's | 1950-55 | 0.3 |
| 2. | Corner Brook | 1951 & 1955 | 0.2 |
| - | Mount Pearl (near St. John's) | 1954 | 0.1 |

| | | | |
|-----|--|---------|-----|
| | NOVA SCOTIA | | |
| 3. | Ingonish Island | 1950-55 | 1.4 |
| 4. | Cape Breton Highlands National Park (Ingonish Beach) | 1950-55 | 0.9 |
| 5. | Baddeck | 1951-54 | 0.4 |
| 6. | Antigonish | 1951-55 | 0.4 |
| 7. | Truro | 1950-54 | 0.2 |
| 8. | Kentville | 1953-55 | 4.7 |
| 9. | Halifax | 1954 | 1.9 |
| 10. | Chester | 1951-55 | 0.3 |
| 11. | Digby | 1951-55 | 3.2 |
| 12. | Meteghan | 1951-52 | 4.5 |
| 13. | Yarmouth | 1952-56 | 4.5 |
| 14. | Middle West Pubnico | 1951 | 0.3 |

| | | | |
|-----|--|---------|-----|
| | PRINCE EDWARD ISLAND | | |
| 15. | Souris | 1952-56 | 1.0 |
| 16. | Montague | 1952-56 | 0.6 |
| 17. | Charlottetown | 1952-56 | 1.4 |
| 18. | P.E.I. National Park (Dalvay House) | 1952-56 | 3.0 |
| 19. | Cavendish | 1952-54 | 1.8 |
| 20. | Summerside | 1952-56 | 1.0 |
| 21. | O'Leary | 1952-56 | 1.4 |
| 22. | Tignish | 1952-56 | 1.2 |

| map reference number | province and locality | period of ragweed pollen survey | average ragweed pollen air-index |
|----------------------------|-----------------------------|--|---|
| <hr/> | | | |
| | NEW BRUNSWICK | | |
| 23. | Sackville | 1952-63 | 1.1 |
| 24. | Pointe du Chene | 1952-53 | 20.0 |
| | | 1954-63 | 3.5* |
| 25. | Shediac Cape | 1952-54 | 0.6 |
| 26. | Moncton | 1952-63 | 0.4 |
| 27. | Fundy National Park | 1950-55 | 5.5 |
| | | 1959-63 | 0.5* |
| 28. | Sussex | 1952-63 | 1.1 |
| 29. | Chipman | 1952-63 | 0.7 |
| 30. | Jemseg | 1952-63 | 3.6 |
| 31. | Gagetown | 1952-53 | 19.5 |
| | | 1954-63 | 1.7* |
| 32. | Saint John | 1952-63 | 0.4 |
| 33. | Welsford | 1952-63 | 0.6 |
| 34. | Fredericton | 1950-63 | 0.3 |
| 35. | St. George | 1952-63 | 0.6 |
| 36. | St. Andrews | 1952-63 | 0.6 |
| 37. | St. Stephen | 1952-63 | 0.7 |
| 38. | Grand Manan | 1956-63 | 0.4 |
| 39. | McAdam | 1956-63 | 0.6 |
| 40. | Woodstock | 1952-63 | 0.4 |
| 41. | Perth-Andover | 1952-63 | 0.3 |
| 42. | Edmundston | 1952-63 | 0.3 |
| 43. | Doaktown | 1952-63 | 0.3 |
| 44. | Richibucto | 1958-63 | 0.2 |
| 45. | Newcastle-Chatham | 1952-63 | 0.3 |
| 46. | Tracadie | 1956-63 | 1.7 |
| 47. | Bathurst | 1954-63 | 0.1 |
| 48. | Dalhousie | 1952-63 | 0.2 |
| 49. | Campbellton | 1952-63 | .0 |

*This figure is included to indicate the reduction in the pollen index since the inception of control campaigns in 1954.

| map reference number | province and locality | period of ragweed pollen survey | average ragweed pollen air-index |
|----------------------------|-----------------------------|--|---|
| | QUEBEC | | |
| 50. | Matapedia | 1938 | 0.1 |
| 51. | Carleton | 1949-56 | 0.7 |
| 52. | New Carlisle | 1938 | 3.0 |
| 53. | Chandler | 1938 | 0.1 |
| 54. | Grand Riviere | 1949-52 | 0.2 |
| 55. | Perce | 1949-56 | 0.7 |
| 56. | Gaspe | 1949-56 | 0.2 |
| 57. | Isles de la Madeleine | 1941 | 0.1 |
| 58. | Mont-Albert | 1939 | 0.1 |
| 59. | Matane | 1954-56 | 2.2 |
| 60. | Mont Joli | 1938 | 0.2 |
| 61. | Father Point | 1934-35 | 1.0 |
| 62. | Rimouski | 1949-56 | 3.0 |
| 63. | Riviere du Loup | 1949-56 | 4.3 |
| 64. | Tadoussac | 1951-56 | 1.2 |
| 65. | Jonquieres (Chicoutimi) | 1953-55 | 3.0 |
| 66. | Normandin | 1939-41 | 3.0 |
| 67. | Baie St. Paul | 1954-56 | 3.3 |
| 68. | Ste. Anne de la Pocatiere | 1949-56 | 10.6 |
| 69. | Charlesbourg | 1939-41 | 2.0 |
| 70. | Quebec City | 1949-55 | 11.1 |
| 71. | Sherbrooke | 1951-55 | 16.4 |
| 72. | Lennoxville | 1939-41 | 4.0 |
| 73. | Victoriaville | 1951-55 | 29.6 |
| 74. | Cap de la Madeleine | 1953-55 | 43.4 |
| 75. | Berthierville | 1939-41 | 33.0 |
| 76. | Farnham | 1939 | 64.0 |
| 77. | Montreal Area: | | |
| | Dorval | 1962-64 | 26.4 |
| | McGill University | 1962-63 | 25.1 |
| | Beaconsfield | 1961 | 22.6 |
| 78. | Ste. Anne de Bellevue | 1950-55 | 37.9 |
| 79. | Lac des Seize Iles | 1949-52 | 9.1 |
| 80. | Ste. Agathe | 1960-63 | 7.1 |
| 81. | St. Jovite | 1960-63 | 3.7 |
| 82. | Mont Tremblant | 1960-63 | 1.4 |
| 83. | Nominingue | 1952-56 | 6.5 |
| 84. | Lac-des-Plages | 1960-63 | 6.3 |
| 85. | Mont Laurier | 1953-55 | 5.2 |
| 86. | Luskville | 1950-51 | 21.0 |
| | St. Jerome | 1960-63 | 17.2 |
| | Labelle | 1960-63 | 22.6 |

| map reference number | province and locality | period of ragweed pollen survey | average ragweed pollen air-index |
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| | ONTARIO | | |
| 87. | Cornwall | 1953-54 | 22.2 |
| 88. | Ottawa | 1950-64 | 14.4 |
| 89. | St. Lawrence Islands National Park (Mallorytown) | 1950-52 | 33.2 |
| 90. | Smiths Falls | 1957-59 | 14.2 |
| 91. | Westport (Rideau Lakes) | 1957-59 | 7.6 |
| 92. | Pictou | 1956 | 38.2 |
| 93. | Belleville | 1956 | 30.2 |
| 94. | Madoc | 1957-59 | 21.4 |
| 95. | Renfrew | 1958-60 | 4.9 |
| 96. | Pembroke | 1958-60 | 4.5 |
| 97. | Barry's Bay | 1957-59 | 1.1 |
| | | 1963-64 | 7.5 |
| 98. | Bancroft | 1955-57 | 8.1 |
| 99. | Chalk River | 1954-56 | 4.5 |
| 100. | Mattawa | 1958-60 | 1.5 |
| 101. | Peterborough | 1953-54 | 33.4 |
| 102. | Haliburton | 1956-58 | 1.9 |
| | | 1963-64 | 3.8 |
| 103. | Algonquin Park | 1952-55 | 12.3 |
| | | 1963 | 1.5 |
| 104. | Dorset | 1952-54 | 6.1 |
| 105. | Huntsville | 1953-56 | 9.4 |
| | | 1963-64 | 5.9 |
| 106. | Muskoka Falls | 1955-57 | 4.6 |
| 107. | Gravenhurst | 1955-57 | 16.8 |
| 108. | Port Carling | 1955-57 | 9.6 |
| 109. | Lake Joseph (Muskoka) | 1951 | 4.0 |
| 110. | Rosseau | 1957-59 | 3.7 |
| 111. | Parry Sound | 1955-56 | 19.4 |
| 112. | Magnetawan | 1957-59 | 3.5 |
| | | 1963-64 | 6.0 |
| 113. | South River | 1957-59 | 1.8 |
| 114. | North Bay | 1951-53 | 7.5 |
| 115. | Toronto Area: | | |
| | Core of Central Zone | 1957-64 | 36.5 |
| | Humber R. near Lake | 1957-64 | 47.5 |
| | Metro-Central | 1957-64 | 41.5 |
| | East Metro | 1957-64 | 51.5 |
| | North West Metro | 1957-64 | 60.4 |
| 116. | Hamilton | 1946-60 | 53.2 |
| 117. | Georgian Bay Islands National Park (Beausoleil Island) | 1950-53 | 14.8 |
| 118. | Midland | 1954 | 11.5 |
| 119. | London | 1953-54 | 38.5 |
| 120. | Point Pelee National Park | 1950-52 | 38.5 |
| 121. | Kincardine | 1958-60 | 22.4 |
| 122. | Warton | 1958-60 | 16.9 |

| map reference number | province and locality | period of ragweed pollen survey | average ragweed pollen air-index |
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| | (Ontario — continued) | | |
| 123. | Lion's Head | 1958-60 | 18.3 |
| 124. | | 1963-64 | 11.4 |
| | Tobermory | 1956-58 | 5.2 |
| 125. | Mindemoya (Manitoulin Island) | 1952-55 | 7.7 |
| 126. | Espanola | 1956-59 | 3.9 |
| 127. | Sudbury | 1954-55 | 3.4 |
| 128. | Temagami | 1954-55 | 2.4 |
| 129. | New Liskeard | 1956-57 | 0.3 |
| 130. | Timmins | 1958-59 | 0.2 |
| 131. | Cochrane | 1934-35 | 2.0 |
| 132. | Kapuskasing | 1951-52 | 0.4 |
| 133. | Blind River | 1956-57 | 2.5 |
| 134. | Sault Ste. Marie | 1952-54 | 6.2 |
| 135. | Port Arthur | 1957-59 | 0.9 |
| 136. | 10 miles S.W. of Fort William | 1956 | 0.1 |
| 137. | Black Sturgeon Lake (Thunder Bay District) | 1952 | 2.3 |
| 138. | Fort Frances | 1956-57 | 1.0 |
| 139. | Cedar Lake (Kenora District) | 1952-54 | 3.4 |
| 140. | Kenora | 1956-58 | 6.2 |
| | Kingston | 1961-63 | 29.4 |
| | Calabogie | 1963-64 | 9.2 |
| | Guelph | 1963-64 | 30.5 |
| | Inverhuron Park | 1964 | 27.4 |
| | Kasshabog Lake (Near Marmora) | 1963-64 | 9.6 |
| | Port Franks | 1964 | 37.5 |
| | Presqu'Île Park | 1963 | 18.4 |
| <hr/> | | | |
| | MANITOBA | | |
| 141. | Winnipeg | 1947-54 | 7.0 |
| | | 1960-62 | 4.1 |
| 142. | Steinbach | 1960-62 | 2.1 |
| 143. | Morris | 1960-62 | 18.6 |
| 144. | Emerson | 1960-61 | 4.7 |
| 145. | Morden | 1940 | 12.0 |
| | | 1960-62 | 3.6 |
| 146. | Mather | 1960-61 | 2.3 |
| 147. | Pierson | 1940 | 6.0 |
| | | 1960-62 | 3.5 |
| 148. | Brandon | 1961-62 | 5.0 |
| 149. | Portage la Prairie | 1960-62 | 1.5 |
| 150. | Russell | 1940 | 1.0 |
| 151. | Riding Mountain National Park | 1950 | 0.2 |
| 152. | Dauphin | 1940 | 5.0 |
| 153. | The Pas | 1940 | 0.1 |

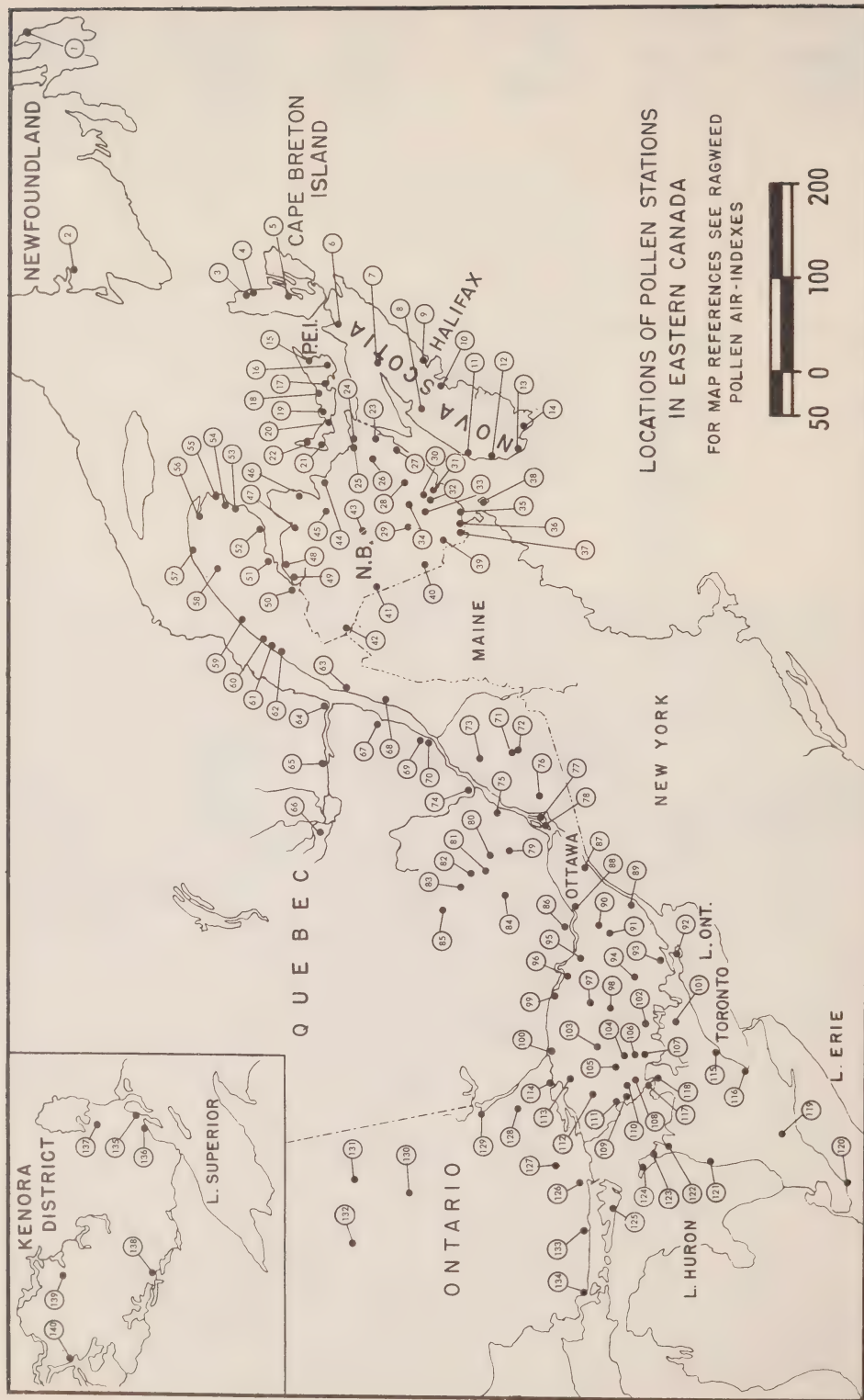
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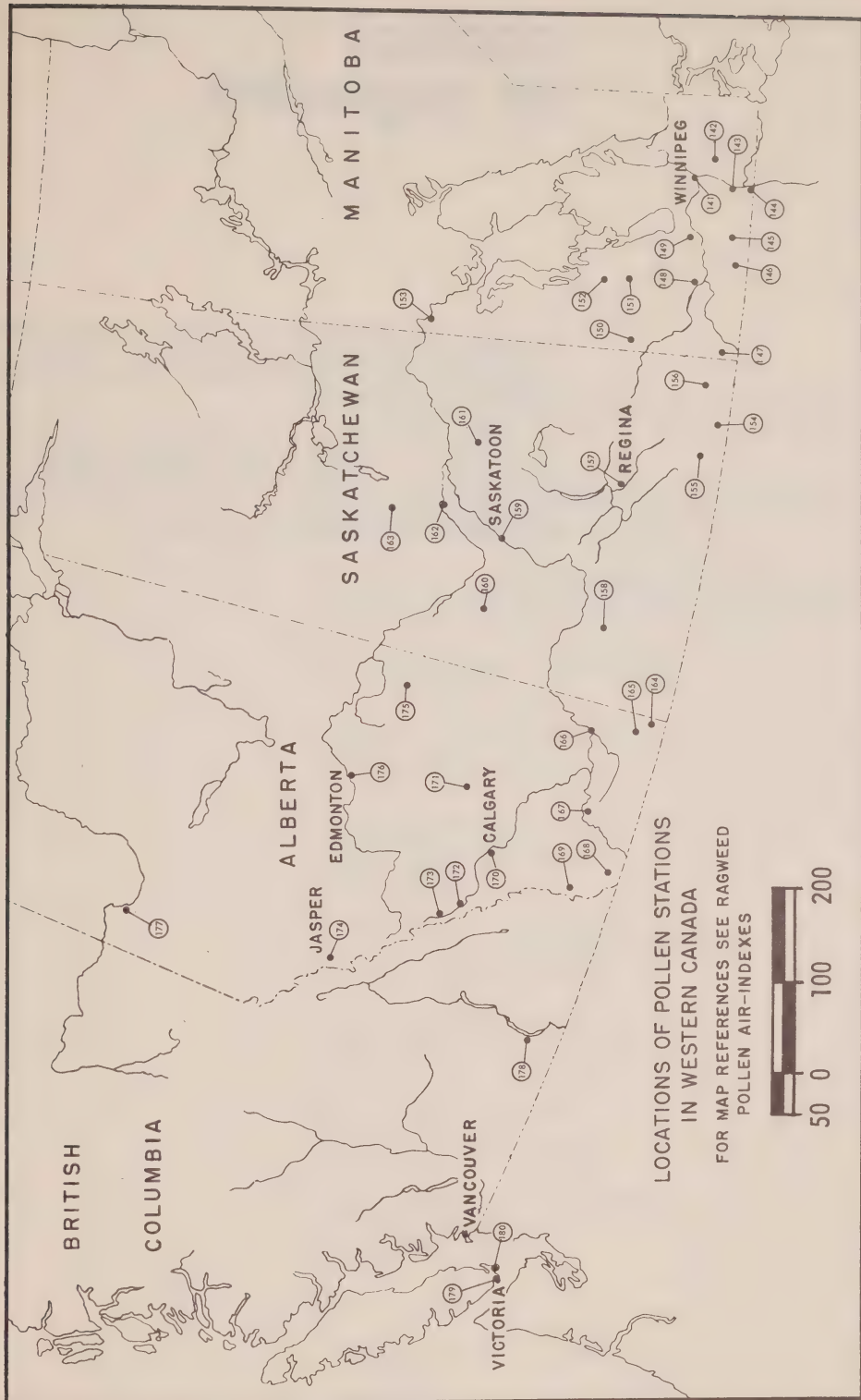
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|------|---|---------|-----|
| | SASKATCHEWAN | | |
| 154. | Estevan | 1960-62 | 2.5 |
| 155. | Weyburn | 1960-62 | 2.9 |
| 156. | Carlyle | 1960-62 | 1.6 |
| 157. | Regina | 1955 | 0.3 |
| 158. | Swift Current | 1952-53 | 1.3 |
| 159. | Saskatoon | 1951-53 | 0.3 |
| 160. | Scott | 1955 | 0.1 |
| 161. | Melfort | 1955 | 0.1 |
| 162. | Prince Albert | 1930 | 0.1 |
| 163. | Prince Albert National Park (Waskesiu) | 1951 | .0 |

| | | | |
|------|--------------------------------------|---------|-----|
| | ALBERTA | | |
| 164. | Cypress Hills | 1952 | .0 |
| 165. | Manyberries | 1950-51 | 0.1 |
| 166. | Medicine Hat | 1950-51 | 7.0 |
| 167. | Lethbridge | 1950-51 | 1.0 |
| 168. | Waterton Lakes National Park | 1952 | .0 |
| 169. | Coleman | 1950-51 | .0 |
| 170. | Calgary | 1950-51 | .0 |
| 171. | Drumheller | 1950-51 | 1.0 |
| 172. | Banff (Banff National Park) | 1950-51 | .0 |
| 173. | Lake Louise (Banff National Park) | 1950-51 | .0 |
| 174. | Jasper (Jasper National Park) | 1952 | .0 |
| 175. | Vermillion | 1950-51 | .0 |
| 176. | Edmonton | 1950-51 | .0 |
| 177. | Beaver Lodge | 1950-51 | .0 |

| map reference number | province and locality | period of ragweed pollen survey | average ragweed pollen air-index |
|----------------------------|-----------------------------|--|---|
| 178. | BRITISH COLUMBIA | | |
| 179. | Summerland | 1952 | .0 |
| | Saanichton (Vancouver | | |
| | Island) | 1953-54 | .0 |
| 180. | Victoria | 1958 | 0.8 |







control of ragweed

The areas where individuals susceptible to ragweed pollen may find relief are indicated in this bulletin. Protection of these havens and the development of others will depend on control of ragweed plant.

The herbicide 2, 4-D, has been found to give effective and cheap control of ragweeds when properly applied. Any community wishing to carry out a control campaign should consult Provincial Departments of Agriculture for advice on the proper utilization of this chemical.

For more Information:

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